

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§		
Robert Cochran, et al.	§	Confirmation No.	9535
	§		
Serial No.: 10/697,821	§	Group Art Unit:	2163
	§		
Filed: October 29, 2003	§	Examiner:	Vy, Hung T.
	§		
For: HIERARCHICAL STORAGE	§	Atty. Docket:	200311026-1
SYSTEM	§		HPQB:0091

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May 13, 2010	/Nathan E. Stacy/
Date	Nathan E. Stacy, Reg. No. 52,249

**BRIEF IN REPLY TO EXAMINER'S
ANSWER DATED MARCH 17, 2010**

This Reply Brief is being filed in response to the Examiner's Answer dated March 17, 2010. As set forth below, the Appellants respectfully reiterate their request for the Board to review and reverse the Examiner's three grounds of rejection. In the previous Office Action, the Examiner rejected independent claims 1, 10, 18, 24, and 25 under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U. S. Patent No. 5,403,639 to Belsan, et al. (hereinafter "Belsan").

Independent claims 1, 10, 18, 24, and 25 generally recite, *inter alia*, a single cabinet containing a plurality of storage devices having "different and distinct *controller-to-storage device bus interface technology types*" and a controller capable of accessing storage devices using three different and distinct types of bus interfaces. (Emphasis added). As disclosed in the specification, and as would be clearly understood by one of ordinary skill in the art, a controller-to-storage device bus interface technology type is a

type of bus used to interface a controller to a storage device, such as Small Computer Systems Interface (SCSI), Fibre Channel (FC), and Serial AT-Attached (SATA). *See* Specification, para. [0027] (noting that the disk adapters can support either SCSI or Fibre Channel Arbitrated Loop (FC-AL) disk interfaces); *see also, id.*, para. [0038] (noting that an “embodiment includes relatively higher performance Small Computer Systems Interface (SCSI) and/or Fibre Channel (FC) disks supplying storage for a first level of hierarchical storage 506 and relatively lower performance Serial AT-attached (SATA) disks supplying storage for a second level of hierarchical storage 506”).

In rejecting the present claims, the Examiner equated the use of different bus interface technology types with the different storage unit types disclosed in Belsan. Specifically, the Examiner states that “[t]here are three different controller-to-storage device bus interface technology types for three different storage such as Cache, disk drive and magnetic [tape].” Examiner’s Answer, p.12. However, to the extent that Belsan discloses different storage unit types, Belsan does not disclose that the different storage units are accessed using different bus interface technology types. Indeed, Belsan discloses storage units that appear to contain a single controller-to-storage device bus interface technology type. *See* Belsan, col. 4, ll. 18-22 (“The file server system 1 is connected to at least one data processor 2 by a data channel 8 which functions to exchange data and control information between the data processor 2 and the file server system 1.”); *see also* Fig. 1. Moreover, Belsan makes no reference to different controller-to-storage technologies. For at least this reason, Belsan cannot anticipate claims 1, 10, 18, 24, and 25.

Nor does Belsan inherently disclose multiple bus interface technology types. Rather, the use of different storage unit types does not require the use of different controller-to-storage device bus interface technology types. This fact is supported by Belsan, which states that the “[t]ape drive control unit interface 208 ... functions like a host channel interface so that the tape drive control unit 10 believes that data channel 20 is a normal IBM OEMI type channel.” Belsan, col. 14, ll. 59-64. Furthermore, Belsan

also states that “[a] plurality of bus input receivers 1603 and bus output drivers 1602 and tag receivers 1604 and drivers 1605 ... conform to the requirements set in the IBM OEMI specification so that normal IBM channels can be used to connect data storage subsystem 100 with a conventional tape drive control unit 10.” *Id.* at col. 15, ll. 7-15. Indeed, the only device bus interface technology type referred to in Belsan is the IBM OEMI specification. *Id.*

The Examiner also asserts that the Appellants are relying on features that are not recited in the present claims, namely the Small Computer Systems Interface (SCSI), Fibre Channel (FC), and Serial AT-Attached (SATA) bus interface types. Examiner’s Answer, p. 12. In response to this assertion, the Appellants note that the stated bus interface types are merely provided as examples of bus interface types, and are not regarded by the Appellants as limitations of the present claims. Rather, the specific bus interface types discussed in the Appeal Brief and above are merely used to explain the difference between a bus interface type and a storage unit type as disclosed in the present specification.

The Examiner states that the claims do not recite “a controller capable of accessing storage devices using three different and distinct types of bus interfaces.” Examiner’s Answer, p. 13 (quoting Appeal Brief, p. 12). However, independent claim 1 explicitly recites, *inter alia*, “a plurality of storage devices contained within the cabinet of at least three different and distinct controller-to-storage device bus interface technology types” and “a controller contained within the cabinet and coupled to the storage device plurality that executes hierarchical storage management and selectively controls usage of storage according to *the different and distinct controller-to-storage device bus interface technology type*.” (Emphasis added). Similar recitations are included in independent claims 10, 18, 24, and 25. Thus, the present claims recite a controller capable of accessing storage devices using three different and distinct types of bus interface.

Further, the Examiner admits that Belsan “comes shorting [sic] stating the single cabinet,” but alleges that “it would still have been obvious to enclose all these driver or storage in a single enclosure not only to protect it from contamination but to make it portable.” Examiner’s Answer, p. 5, 13. However, nothing in Belsan shows, indicates, or even implies that a single cabinet may be used to contain multiple storage units using different controller-to-storage device bus interface technology types. Neither of the reasons provided by the Examiner can be found in Belsan, nor does either reason provide an explanation of how the teaching of a single cabinet is obvious over Belsan. Specifically, if each separate storage device used in Belsan were kept in its own, original cabinet, the units would be both protected from contamination and, in fact, more portable than if all three devices were placed in a single cabinet. Thus, claims 1, 10, 18, 24, and 25 are allowable over Belsan for at least this additional reason.

Conclusion

The Appellants respectfully submit that all pending claims are in condition for allowance. However, if the Examiner or Board wishes to resolve any other issues by way of a telephone conference, the Examiner or Board is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

Date: May 13, 2010

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